

30. (New) The method of claim 29 further comprising dividing the relational data structure among at least two tables.

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AH 31. (New) A relational data structure for representing multiple simultaneous hierarchies without needing dedicated database relationships between objects in each of the multiple hierarchies, wherein the relational data structure is based on a plurality of objects, the data structure comprising:

a first table for:

organizing a plurality of objects, wherein each object is related to at least one other object by a defined relationship; and

storing an object identifier associated with each of the plurality of objects; and

a second table for:

associating the object identifier of each of the plurality of objects with the object identifier of each related object to represent each defined relationship; and

storing a hierarchy identifier associated with each relationship for indicating that each relationship is associated with a particular one of the multiple hierarchies.

32. (New) The relational data structure of claim 31 further comprising a third table for storing a summary of each of the multiple hierarchies.

REMARKS

Claims 1-10, 21, and 23-32 are pending. Claims 11-20 and 22 have been canceled. Claims 1, 5, and 21 have been amended and marked-up versions of the amended claims are attached pursuant to C.F.R. § 1.121. New claims 23-32 have been added.

Specification

The title has been amended to more clearly indicate the subject matter of the application as requested by the Examiner in paragraph 3 of the Office action.

Applicant thanks Examiner for the telephone conversation on September 16, 2002, in which Examiner indicated that Applicant may postpone the correction of the program listing in the specification as requested in paragraph 4 of the Office action.

Objection to the Claims:

Claim 5 has been amended to overcome the stated objection.

Rejections under 35 U.S.C. § 102

Claims 1-5, 7-15, 17-20, and 22 stand rejected under § 102(b) as being anticipated by U.S. Patent No. 5,133,068 to Crus et al. ("Crus"). As the PTO provides in MPEP § 2131, "[t]o anticipate a claim, the reference must teach every element of the claim...." Therefore, the Crus patent must disclose all of the elements of the claims to sustain the rejections. Accordingly, Applicant respectfully traverses these rejections on the following grounds.

MPEP § 2131 requires that "[t]he identical invention must be shown in as complete detail as is contained in the ... claim." Claim 1, as amended, recites a method of creating a relational database so that multiple simultaneous hierarchies can be defined without needing dedicated database relationships between objects in the multiple hierarchies. The relational database includes a plurality of objects each having an associated data. The method comprises forming a first database table having a plurality of entries, each entry representing an object with an associated data; and forming a second database table having a plurality of entries, each entry defining a relationship between said plurality of objects, wherein each entry is associated with at least one of the multiple hierarchies.

In contrast, Crus is directed to an "implementation of referential integrity" (Abstract) that operates on a single hierarchy, although the implementation may utilize a "single, shared procedure which may be embedded in the data base manager" (Abstract). For example, the illustrations of Figs. 1-5 relate to a hierarchy in which there is one defined relationship structure (e.g., a single hierarchy). While there may be multiple relationships within that structure, they are all interrelated to form a combined whole. Nowhere does Crus teach or suggest a hierarchical structure that can be defined without needing dedicated database relationships between objects in the multiple hierarchies. Crus also fails to teach or suggest rearranging the hierarchy to form a completely different hierarchy. In fact, the referential integrity disclosed by Crus ensures that the established relationships will be protected. Accordingly, Crus fails to disclose or suggest these elements or the manner in which they interconnect as required by MPEP § 2131 and claim 1 is allowable over the Crus patent.

Claims 2-5 and 7-10 depend from and further limit claim 1 and so are allowable for at least that reason.

Claims 11-15, 17-20, and 22 have been canceled and so the rejection as to these claims is deemed moot.

Claim 21 stands rejected under § 102(b) as being anticipated by U.S. Patent No. 5,257,185 to Farley et al. ("Farley"). As the PTO provides in MPEP § 2131, "[t]o anticipate a

claim, the reference must teach every element of the claim...." Therefore, the Farley patent must disclose all of the elements of the claims to sustain the rejections. Accordingly, Applicant respectfully traverses these rejections on the following grounds.

Claim 21 recites, in part, a method of creating a relational data structure for storage and retrieval of multiple simultaneous hierarchical database relationships without needing dedicated database relationships between objects in the multiple hierarchies. In contrast, Farley specifically applies to "a hierarchy of topic nodes" (Abstract) where a topic is defined as "the sum of its related, automatically cross-referenced information units and other information files" (col. 11, lines 48-50). Furthermore, "the cross-referenced structure is pre-established" (col. 11, lines 63, 64). Accordingly, Farley fails to teach or suggest multiple simultaneous hierarchical database relationships that do not need dedicated database relationships between objects in the multiple hierarchies. Therefore, Farley fails to disclose or suggest these elements or the manner in which they interconnect as required by MPEP § 2131 and claim 21 is allowable over the Farley patent.

Rejection under 35 U.S.C. § 103

Claims 6 and 16 stand rejected under § 103(a) as being unpatentable over Crus in view of U.S. Patent No. 5,675,785 to Hall et al. ("Hall").

Claim 6 depends from and further limits claim 1 and is therefore allowable for at least that reason.

Claim 16 has been canceled and so the rejection as to this claim is deemed moot.

New claims 23-32

New claim 23 recites, in part, creating a second table where each parent-child relationship is represented by associating an object identifier of each parent object with an object identifier of each related child object and indicating that each parent-child relationship is associated with a first hierarchical relationship, so that multiple simultaneous hierarchies can be defined using a relational data structure without needing dedicated database relationships between objects in multiple hierarchies.

None of the cited references, alone or in combination, disclose or suggest the above described elements of claim 23 or their interrelation. As stated previously, "[t]he identical invention must be shown in as complete detail as is contained in the ... claim" to anticipate the claim, according to MPEP § 2131. Furthermore, as provided in MPEP § 2143, "[t]o establish a prima facie case of obviousness, ... the prior art reference (or references when combined) must

teach or suggest all the claim limitations.” Accordingly, as the cited references fail to disclose or suggest the elements of claim 23 as discussed above, claim 23 is allowable over the cited references.

Dependent claims 24-27 depend from and further limit claim 23 and are allowable over the cited references for at least this reason.

New claim 28 recites, in part, a method for using a relational data structure to represent multiple simultaneous hierarchies without needing dedicated database relationships between objects in each of the multiple hierarchies. None of the cited references, alone or in combination, disclose or suggest the above described elements of claim 28 or their interrelation. As stated previously, “[t]he identical invention must be shown in as complete detail as is contained in the ... claim” to anticipate the claim, according to MPEP § 2131. Furthermore, as provided in MPEP § 2143, “[t]o establish a prima facie case of obviousness, ... the prior art reference (or references when combined) must teach or suggest all the claim limitations.” Accordingly, as the cited references fail to disclose or suggest the elements of claim 28, claim 28 is allowable over the cited references.

Dependent claims 29 and 30 depend from and further limit claim 28 and are allowable over the cited references for at least this reason.

New claim 31 recites a relational data structure for representing multiple simultaneous hierarchies without needing dedicated database relationships between objects in each of the multiple hierarchies, where the relational data structure is based on a plurality of objects. The data structure includes a first table for organizing a plurality of objects, where each object is related to at least one other object by a defined relationship, and for storing an object identifier associated with each of the plurality of objects. The data structure also includes a second table for associating the object identifier of each of the plurality of objects with the object identifier of each related object to represent each defined relationship, and for storing a hierarchy identifier associated with each relationship for indicating that each relationship is associated with a particular one of the multiple hierarchies.

None of the cited references, alone or in combination, disclose or suggest the above described elements of claim 31 or their interrelation. As stated previously, “[t]he identical invention must be shown in as complete detail as is contained in the ... claim” to anticipate the claim, according to MPEP § 2131. Furthermore, as provided in MPEP § 2143, “[t]o establish a prima facie case of obviousness, ... the prior art reference (or references when combined) must teach or suggest all the claim limitations.” Accordingly, as the cited references fail to disclose or suggest the elements of claim 31, claim 31 is allowable over the cited references.

Dependent claim 32 depends from and further limits claim 31 and is allowable over the cited references for at least this reason.

Conclusion

Therefore, it is respectfully submitted that independent claims 1, 21, 23, 28, and 31 are in condition for allowance. Dependent claims 2-10, 24-27, 29, 30, and 32 depend from and further limit independent claims 1, 23, 28, and 31 and therefore are allowable as well.

Should the Examiner deem that any further amendment is desirable to place this application in condition for allowance, the Examiner is invited to telephone the undersigned at the below listed telephone number.

Respectfully submitted,

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PATENT TRADEMARK OFFICE

Marked-up Claims Pursuant to CFR § 1.121

1. (Amended) A method of creating a relational database so that multiple simultaneous hierarchies can defined without needing dedicated database relationships between objects in the multiple hierarchies, wherein the relational database [having] includes a plurality of objects each having an associated data; said method comprising:

forming a first database table having a plurality of entries, each entry representing an object with an associated data; and

forming a second database table having a plurality of entries, each entry defining a relationship between said plurality of objects, wherein each entry is associated with at least one of the multiple hierarchies.

5. (Amended) The method of claim 1 wherein said plurality of relationships include tree [and graph] type structures.

21. (Amended) A method of creating a relational data structure for storage and retrieval of multiple simultaneous hierarchical database relationships without needing dedicated database relationships between objects in the multiple hierarchies, the method comprising:

forming a table of members available in the multiple simultaneous hierarchical database relationships;

forming a table of reporting relationships among the members available in the multiple simultaneous hierarchical database relationships; and

forming a table having a set of hierarchies, each hierarchy corresponding to a reporting relationship in said table of reporting relationships.